

**CIRCUIT ARRANGEMENT FOR BRIEFLY MAINTAINING AT LEAST
ONE INTERNAL NORMAL D.C. VOLTAGE UPON FAILURE OF THE
VEHICLE ELECTRIC SYSTEM SUPPLY VOLTAGE**

Field Of The Invention

The present invention is directed to a circuit arrangement.

Background Information

5 To an increasing extent, electronic circuits in the automotive field must be able to fulfill a full or restricted scope of functions (sending messages to telephone modules for emergency calls, deployment of airbags, etc.) for a certain period of time (reserve power time) after the vehicle electric supply voltage has been shut down or the battery has been disconnected (e.g., in a collision).

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In control units today, the power required for this is typically stored temporarily in a capacitor. According to the equation $W = \frac{1}{2} C U^2$, this power is proportional to capacitance C of the capacitor and the square of voltage U . To minimize capacitance C of the capacitor and be able to store a large amount of power, the capacitor is usually charged to a voltage which

15 is higher than the vehicle electric system supply voltage, via a step-up regulator, which is generally designed as a switching regulator.

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In the event of loss of power supply voltage, power is taken from the reserve energy capacitor via one or more step-down regulators which generate the required internal normal d.c.

20 voltage(s).

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This is explained in greater detail below with reference to Figure 1 of the drawing.

Figure 1 shows a circuit arrangement known from the related art in a highly schematized

25 style, with vehicle electric system supply voltage V_{BAT} being supplied to the voltage input at the left in the figure via a non-reversible diode 1 and the voltage output at the right in the

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